Notes on *Fissidens* (Fissidentaceae, Bryopsida) in Laos

Tadashi Suzuki

1. Fissidens erecto-thorsbornei

   *Fissidens erecto-thorsbornei* is new to science.

Three species of *Fissidens*, namely *F. parkii*, *F. nigro-viridis*, and *F. perpellucidus*, are additions to the moss flora of Laos.

Introduction

Suzuki and Iwatsuki (2013) added 24 species to the *Fissidens* flora of Laos, bringing the total number to 30 species. In this paper, I report four species of *Fissidens*, one species is new to science, and three species are new to the Laotian flora. All collections are deposited in the Herbarium of the Hattori Botanical Laboratory (NICH). Descriptions, specimens examined, distributions, notes, and illustrations of four species are included.

1a. *Fissidens* subgen. *Fissidens* sect. *Semilimbidium*


   Plants dull green. Stems simple, 1.5–2.5 mm long, 1.3–1.6 mm wide with leaves; axillary hyaline nodules not differentiated, cortical cells in cross section small and thick walled, central strand differentiated. Leaves in 4–8 pairs, imbricate, upper leaves lingulate to oblong lanceolate, 0.8–1.1 mm long, 0.2–0.3 mm wide, widely acute and often apiculate; dorsal lamina wedge shaped, often abruptly narrowed, ending well above insertion, not decurrent; costa percurrent, *Bryoides*-type; margins slightly serrulate near apex; vaginant laminae 3/5–4/5 of leaf length; limbate only on vaginant laminae of upper and perichaetial leaves, limbidium composed elongate cells in 2–3 rows; laminae unistratose; cells of apical lamina irregularly quadrate to hexagonal, 5–10 μm long, smooth, thick walled.

   Dioicous; perigonia terminal on elongate stems; setae terminal, about 1.4 mm long, smooth; capsules erect and symmetrical; urn about 0.8 mm long, exothecial cells rounded.
quadrate to rounded rectangular, 23–38 μm long, about 23 μm wide, thin walled; opercula long rostrate, about 0.4 mm long; peristome teeth lanceolate, not divided, lacking spiral thickenings, *Moenkemeyera*-type, 60–90 μm long, 33–38 μm wide at base; spores 8–10 μm diam., smooth; calyptrae campanulate, 0.4–0.6 mm long.

Additional description: Brotherus 1925, 154, f. 130 (as *Moenkemeyera mirabilis*).

Specimen examined: Vientiane Capital, Naxaythong District, Ban Xaisana, 200 m alt., *Shiina 120826*.

Distribution: Africa; new to Laos.

This species is characterized by a marginal limbidium restricted to the vaginant laminae; and, peristome teeth *Moenkemeyera*-type.

**Ib. Fissidens subgen. Fissidens sect. Aloma**

1. *Fissidens erecto-thorsbornei* Tad. Suzuki, *n. sp.* Fig. 2.

Plants lightly green. Stems very short, 0.8–1.0 mm long, 0.2–0.4 mm wide with leaves scattered on persistent protonema; cortical cells in cross section more or less large, thick walled, central strand not differentiated. Leaves linear-subulate from a broader, more or less claspering, oblong base, 0.4–0.7 mm long; costa weak below, stronger above, *Thorsbornei*-type; margins slightly serrate throughout; cells of lamina long and narrow, rectangular or rhomboid, 21–39 μm long, 8–10 μm wide at the widest part of lamina, smooth, moderately thick walled.

Rhizautoicious; perigonia at base of stem; setae terminal, 3.7–4.7 mm long; capsules erect and symmetrical; urn 0.3–0.4 mm long; exothecial cells rounded quadrangular to hexagonal, thin walled but with distinctly collenchymatous, 19–26 μm long, 13–20 μm wide; opercula rostrate, about 0.4 mm long; peristome teeth *Fissidens*-type, 125–195 μm long, about 25 μm wide at base; spores 10–15 μm diam., smooth; calyptrae cucullate, about 0.4 mm long.

Specimen examined: Vientiane Capital, Naxaythong District, 5km W of B. Nayang, 18°07′15″ N, 102°26′23″ E, 270 m alt., on soil in forest, *Shiina 130924-2*, holotype (NICH).

Distribution: Endemic to Laos.

This new species is similar to *F. thorsbornei* Stone. Both species have *Thorsbornei*-type costae. However, capsules of *F. erecto-thorsbornei* are erect and symmetrical, while those of *F. thorsbornei* are inclined and asymmetrical.

**II. Fissidens subgen. Neoamblyothallia sect. Crispodium**


Plants blackish green. Stems simple, 3.0–9.5 mm long, 1.5–2.5 mm wide with leaves; axillary hyaline nodules distinctly differentiated; cortical cells in cross section small, thick walled, central strand slightly differentiated. Leaves in 11–19 pairs, imbricate; upper leaves oblong lanceolate, 1.5–2.3 mm long, about 0.4 mm wide, obtuse and mucronate; base of dorsal lamina wedge shaped, not decurrent; costa ceasing below apex, *Bryoides*-type; margin slightly crenate throughout; vaginant laminae about 3/5 of leaf length; laminae unistratose; cells of apical lamina round to rounded hexagonal, 7–12 μm long, smooth, thin walled;
juxtacostal cells at base of vaginant lamina abruptly and conspicuously enlarged.

Dioicous? Perigonial plants and sporophytes not found.

Additional description: Eddy 1988, 64, f. 53.

Specimen examined: Vientiane Capital, Naxaythong District, 2km NW of Ban Vengkham, 230 m alt., on wet rock by stream, Shiina 120904.

Distribution: Malesia (Borneo); new to Laos.

This species is characterized by blackish green plants; distinct axillary hyaline nodules; smooth laminal cells; and, juxtacostal cells at the base of vaginant laminae conspicuously enlarged.

2. *Fissidens perpellucidus* Dixon, J. Linn. Soc. Bot. 50: 78. 1 f. 9 (1935). Fig. 4.

Plants yellowish green. Stems branched, 5.0 – 8.8 mm long, 3.0 – 3.5 mm wide with leaves, axillary hyaline nodules distinctly differentiated; cortical cells in cross section small, thick walled, central strand slightly differentiated. Leaves in 9 – 16 pairs, more or less imbricate; upper leaves oblong lanceolate, 1.8 – 2.0 mm long, about 0.4 mm wide, acute; base of dorsal lamina round to wedge shaped, not decurrent; costa percurrent, Bryoides-type; margin slightly crenate throughout; vaginant laminae about 3/5 of leaf length; laminae unistratose; cells of apical lamina irregularly quadrato to hexagonal, 6 – 12 μm long, smooth, thin walled.

Dioicous? Perigonial plants and sporophytes not found.

Specimens examined: Vientiane Capital, Naxaythong District, 5km W of B. Nayang, 18°07′16″ N, 102°26′24″ E, 260 m alt., on soil by stream in forest, Shiina 131015-2; 7km W of Ban Donglouang, on clay soil by stream in forest, Shiina 130928-3; Vientiane P., M. Vangviang, 6 km NW of Ban Vangviang, 300 m alt., in limestone area, on soil in forest, Shiina 130504-2.

Distribution: Malesia (Borneo); new to Laos.

This species is characterized by yellowish green plants; distinct axillary hyaline nodules; and, smooth laminal cells.

Acknowledgements

I am grateful to Dr. B. C. Tan for correcting the English text and for valuable suggestions. I am much indebted to Mr. K. Shiina who collected the specimens and provided them for a study. Grateful acknowledgement is made of the financial support for this study provided by Grant-in-Aid for Scientific Research (C) (no. 16570086) by the Japan Society for the Promotion of Science.

Literature cited


Museum (Natural History), London.
Fig. 1. *Fissidens parkii* Mitt.: a, plant. b–f, leaves. g, cells at leaf apex. h, cells of apical lamina. i, cells at margin of dorsal lamina. j, k, cross sections of leaves. l, cross section of stem. m, perigonial plant. n, stoma. o, peristome teeth. p, operculum. q, spores. r, calyptra. All figures drawn from *Shiina 120826* in NICH.
Fig. 2. *Fissidens erecto-thorsbornei* Tad. Suzuki: a, b, plants. c, leaf. d, cells at sheathing base of leaf. f, cross section of leaf. g, capsule. h, peristome teeth and spores. i, calyptra. All figures taken from holotype (*Shiina 130924-2* in NICH).
Fig. 3. *Fissidens nigro-viridis* Salm.: a, plant. b–d, leaves. e, cells at leaf apex. f, cells of apical lamina. g, cells at margin of dorsal lamina. h, i, cross sections of leaves. j, cross section of stem. k, l, axillary hyaline nodules. All figures drawn from *Shiina 120904* in NICH.
Fig. 4. *Fissidens perpellucidus* Dixon: a, plant. b, c, leaves. d, cells at leaf apex. e, cells of apical lamina. f, cells at margin of dorsal lamina. g–i, cross sections of leaves. j, axillary hyaline nodules. k, cross section of stem. All figures drawn from *Shiina 131015-2* in NICH.